APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,350	02/19/2002	Stephen L. Morein	P290727 010007BM	1361

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PILLSBURY WINTHROP, LLP
P.O. BOX 10500
MCLEAN, VA 22102

EXAMINER
NGUYEN, KIMBINH T

ART UNIT	PAPER NUMBER
2671	4

DATE MAILED: 11/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 February 2002*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application)
since a specific reference was included in the first sentence of the specification or in an Application Data Sheet.
37 CFR 1.78.

    a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific
reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)   4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5) ☐ Notice of Informal Patent Application (PTO-152)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _3_ .   6) ☐ Other: .

DETAILED ACTION

1.   Claims 1-44 are pending in the application.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Duluk, Jr. et al. (6,476807).

Claim 1, Duluk, Jr. et al. discloses determining a non-depth (alpha test, color test,

stencil test; col. 13, line 67 through col. 14, line 2) of a fragment corresponding to a pixel

(col. 19, lines 56-59); determining that a scratchpad (tile) contains an entry mapped to

the pixel (visible samples; col. 20, lines 46-59); and comparing a first value of the

fragment (z or depth value) to a value of the entry (col. 20, lines 63-67), wherein

determining a non-depth conditional status of a fragment (color test) includes

determining whether incorporation of a second value of the fragment (color value) into

the pixel is conditional on a non-depth criterion (col. 21, lines 10-25). Duluk, Jr. does not

teach determining whether incorporation of a second value of the fragment (color value)

into the pixel is conditional on a non-depth criterion; however, Duluk, Jr. shows that the

primitive's color at the sample location is determined. Additional efficiency can be

achieved by determining a single per-pixel color for all the samples within the same

pixel, rather than computing per-sample color (col. 21, lines 21-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the color value into the pixel is conditional on a non depth criterion as taught by Duluk, Jr., because coloring process is performed on the samples, it would improve the efficiency of the rendering process (col. 21, lines 15-17).

Claims 2 and 3, Duluk, Jr. et al. discloses the first value of the fragment includes a Z value; the second value of the fragment includes a color value (col. 20, lines 54-56).

Claim 4, Duluk, Jr. et al. discloses determining a non-depth of a fragment includes determining a current configuration of a pixel pipeline (col. 13, line 66 through col. 14, line 2); **Claim 5**, determining a current configuration of a pixel pipeline includes determining a value of at least one state variable (col. 14, lines 1-3). **Claims 6, 7**, determining a non-depth conditional status of a fragment includes determining whether a non-depth fragment test is enabled (alpha test is enabled; col. 43, line 16). **Claims 8, 9, 21**, determining a non-depth conditional status of a fragment occurs before comparing a first value (z value) of the fragment to a value of the entry (col. 20, lines 61-64). Claim 9, discloses determining a non-depth conditional status of a fragment occurs after comparing a first value (z value) of the fragment to a value of the entry (the new pixel is in front of the existing pixel: alpha test; col. 20, lines 64-67). **Claim 10**, comparing a first value of the fragment to a value of the entry includes determining whether a Z value of the fragment is less than the value of the entry (col. 18, lines 9-11). **Claim 11**, overwriting the value of the entry with the first value of the fragment (col. 20, lines 66-67). **Claim 12**, passing the fragment to a pixel pipeline (col. 19, lines 3-4).

Claim 13, determining that a scratchpad (tile) contains an entry mapped to the pixel includes determining that the entry is valid; **Claim 14**, determining a scratchpad contains an entry mapped to the pixel includes determining the scratchpad contains a line of entries, the line being mapped to a block of pixels that includes the pixel; **Claim 15**, determining that the scratchpad contains a line of entries includes determining that the line is valid (figs. 13A-13C). **Claims 16, 17**, initializing a value of each among the line of entries to the backmost among a set of Z values (col. 33, lines 26-41). **Claim 18**, comparing the first value of the fragment to a representative Z value corresponding to the fragment; **Claim 19**, overwriting the representative Z value (col. 20, lines 63-67). **Claim 20**, determining that a scratchpad contains an entry mapped to the pixel includes determining that the scratchpad contains a line of entries (row and column), the line being mapped to a block of pixels that includes the pixel, and wherein overwriting the representative Z value includes comparing the representative Z value with the backmost Z value of the line (col. 33, lines 26-41). **Claims 22, 23**, initializing the value of the entry to an initial value (initialized to zero at the start of the pass; col. 33, lines 24-25); the initial value is a maximum Z value (zfar value). **Claim 24**, the initial value is the backmost among a set of Z values; **Claim 25**, the initial value is the backmost among a set of representative Z values. **Claim 26**, the initial value is a representative Z value corresponding to a location to which the entry is mapped (col. 33, lines 26-40).

Claims 27-32, 35, 37, the rationale provided in the rejection of claims 1, 2, 3, 6, 16, 17 is incorporated herein.

Claim 33, discloses altering a portion of the scratchpad includes storing the first value of the fragment to the entry (in the z buffer); **Claim 34**, mapping a line of the scratchpad (tile) to a block of pixels (stamp) that includes the pixel (figs. 13A-13C).

Claims 36, and 38-44, the rationale provided in the rejection of claim 1 is incorporated herein. In addition Duluk, Jr. et al. determining an occlusion status of the fragment and the procedure of early culling (col. 28, line 43 through col. 29, line 56; fig. 12; col. 35 through col. 42, line 26).

4.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Kimbinh Nguyen** whose telephone number is **(703) 305-9683**. The examiner can normally be reached **(Monday- Thursday from 7:00 AM to 4:30 PM and alternate Fridays from 7:00 AM to 3:30 PM)**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman, can be reached at (703) 305-9798.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231
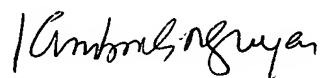
Or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Part II, 2121 Crystal Drive,

Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the Technology Center 2600 Customer Service Office

whose telephone number is (703) 306-0377.

November 24, 2003

Kimbinh Nguyen

Patent Examiner AU 2671